Abstract Submitted for the MAR17 Meeting of The American Physical Society

Voltage Controlled Perpendicular Magnetic Anisotropy.¹ NICHOLAS NOVIASKY, ILDAR SABIRIANOV, State University of New York at Oswego, SHI CAO, XIAOZHE ZHANG, ANDREI SOKOLOV, EUGENE KIRI-ANOV, PETER DOWBEN, University of Nebraska at Lincoln, CAROLINA C. ILIE, State University of New York at Oswego, UNIVERSITY OF NEBRASKA AT LINCOLN TEAM, STATE UNIVERSITY OF NEW YORK AT OSWEGO COL-LABORATION — Here we report the voltage controlled perpendicular magnetic anisotropy of a multilayer stack composed of P-type silicon substrate/ Gd2O3/ Co/ Pt grown by pulsed laser deposition (PLD) under ultra-high vacuum conditions. For examination of the voltage effect on magnetic properties of the samples, we performed magneto optical Kerr effect (MOKE) measurements. The results show a clear inverse relationship between voltage and coercivity. The exchange of oxygen ions which occurs at the interface between gadolinium oxide and cobalt may increase the cobalt oxide concentration within the optical interface layer. One potential application for this research could be the creation of a voltage controlled magnetic tunneling junction memory storage device. Proper implementation may be able to combine non-volatility with higher areal densities and low power consumption.

¹NSF Research Experience for Faculty and Students at Undergraduate Institutions Program, UNL- MRSEC

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Date submitted: 02 Nov 2016

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